

What is claimed is:

1. A method comprising:

making a cut into a first surface of a substrate using a cutting disk having a generally planar surface that is oriented generally perpendicular to the first surface;

first directing abrasive particles toward a first portion of a second generally opposite surface of the substrate to remove substrate material; and,

after said first directing, second directing abrasive particles toward a second different portion of the second surface of the substrate to remove additional substrate material, wherein said first directing and said second directing, in combination with said making a cut, form a slot.

2. The method of claim 1, wherein said act of making and said acts of directing form the slot which is defined, at least in part, by two generally opposing endwalls each of which form an angle of at least 90 degrees measured through the substrate and relative to the second surface.

3. The method of claim 1, wherein said act of making comprises making a cut between two generally linear arrays of firing resistors positioned over the substrate.

4. The method of claim 1, further comprising after said acts of making and directing, positioning an orifice plate over the first surface.
5. A print cartridge formed in accordance with the method of claim 1.
6. A method comprising:
 - cutting substrate material with a circular saw positioned relative to a first surface of a substrate; and,
 - removing additional substrate material from a second generally opposite surface of the substrate by moving a sand drill nozzle along the substrate while ejecting abrasive particles therefrom, wherein said acts of cutting and removing form a slot through the substrate.
7. The method of claim 6, wherein said act of moving comprises moving a sand drill nozzle having a terminal end through which the abrasive particles are ejected along a path, the terminal end having a generally square cross section taken transverse the path.

8. The method of claim 6, wherein said act of moving comprises moving a sand drill nozzle having a terminal end through which the abrasive particles are ejected along a path, the terminal end having a generally circular cross section taken transverse the path.
9. The method of claim 6, wherein said act of cutting forms a tapered elevational profile in the substrate.
10. The method of claim 6, wherein the first surface and the second surface define a thickness therebetween, and wherein said act of cutting cuts through the entire thickness of at least a portion of the substrate.
11. The method of claim 6, wherein said act of cutting comprises moving the circular saw along a vector simultaneously having a component in a first direction substantially perpendicular to the first surface and a component in a second direction substantially parallel to the first surface.
12. The method of claim 6, wherein said cutting comprises making multiple passes with the circular saw.
13. A device having a substrate made according to the method of claim 6.

14. A print cartridge having a substrate made according to the method of claim

6.

15. A method comprising:

forming a feature into a substrate having a first substrate surface and a second substrate surface; and,

moving a sand drill nozzle along the substrate to remove substrate material sufficient to form, in combination with said forming, a slot through the substrate.

16. The method of claim 15, wherein said act of forming comprises forming the feature into the first substrate surface, and wherein said act of moving comprises moving the nozzle along the second substrate surface.

17. The method of claim 15, wherein said act of forming comprises forming the feature into the first substrate surface and, wherein said act of moving comprises moving the nozzle along the first substrate surface.

18. The method of claim 15, wherein said act of moving comprises moving the nozzle at a variable speed.

19. The method of claim 15, wherein said act of forming comprises forming a feature having a tapered elevational profile.
20. The method of claim 19, wherein said act of moving comprises moving the sand drill nozzle at a speed that is proportional to an elevational thickness of substrate material between a second surface and the tapered elevational profile.
21. The method of claim 15, wherein said act of forming comprises etching.
22. The method of claim 15, wherein the act of forming comprises one or more of sand drilling, laser machining, dry etching, wet etching, and mechanically abrading.
23. The method of claim 15, wherein the acts of forming and moving configure the slot with a generally uniform width at the second surface as measured generally parallel a short axis of the slot.
24. The method of claim 15, wherein the acts of forming and moving configure the slot at the second surface to have a greater width at first and second generally opposing end regions than at a mid-region.

25. The method of claim 15, wherein the acts of forming and moving configure the slot with a generally uniform width at the first surface as measured generally parallel a short axis of the slot.

26. The method of claim 15, wherein the acts of forming and moving configure the slot with a generally uniform width at the first surface as measured generally parallel a short axis of the slot, and wherein the width at the first surface is a minimum slot width.

27. The method of claim 15, wherein the acts of forming and moving configure the slot with a generally uniform minimum width measured orthogonally to a long axis of the slot.

28. A print cartridge incorporating a substrate made in accordance with the method of claim 15.

29. A method comprising:

removing substrate material through a first surface of a substrate; and,

directing abrasive particles at a second surface of the substrate to remove substrate material sufficient to form, in combination with said removing, a slot through the substrate and extending along a long axis within the substrate, and wherein the slot has a generally uniform width along the long axis at the first

surface.

30. The method of claim 29, wherein the act of directing comprises moving a sand drill nozzle generally parallel to the second surface.

31. A method comprising:

forming a feature into a first surface of a substrate, the feature having a tapered elevational profile;

positioning a sand drill nozzle proximate to a second generally opposite surface of the substrate; and,

moving the sand drill nozzle generally along the feature at a speed that is a function of an elevational thickness of substrate material between the nozzle and the feature.

32. The method of claim 31, wherein the act of positioning comprises positioning the sand drill nozzle a distance in a range of about 1,000 microns to about 5,000 microns from the second surface.

33. The method of claim 31, wherein the act of positioning comprises positioning the sand drill nozzle a distance in a range of about 2000 microns to about 2500 microns from the second surface.

34. A fluid ejecting device incorporating a substrate made in accordance with the method of claim 31.
35. The method of claim 31, wherein the act of forming comprises one or more of sand drilling, laser machining, dry etching, wet etching, and mechanically abrading.
36. The method of claim 31, wherein the act of forming leaves substrate material that extends across the feature in at least one location.
37. The method of claim 31, wherein the act of moving comprises moving the sand drill at speeds inversely proportional to the elevational profile.
38. A method comprising:
cutting substrate material by moving a circular saw toward a substrate from a first direction; and,
removing additional substrate material from the substrate by moving a sand drill nozzle along the substrate while ejecting abrasive particles from the sand drill in a second direction which is generally opposite to the first direction, wherein the cutting and removing form a desired slot through the substrate.

39. A print head comprising:

a substrate having a thickness defined between a first surface and a generally opposing second surface; and,

a slot defining a long axis and a short axis and extending between the first surface and the second surface, wherein the slot is formed at least in part, by removing substrate material through the first surface and abrading substrate material through the second surface, and wherein the slot has a generally uniform width at the first surface as measured generally orthogonally to the long axis.

40. The print head of claim 39, wherein the slot has a width at the second surface which is greater at first and second generally opposing slot ends than at a mid-region of the slot.

41. The print head of claim 39, wherein the slot has one or more ribs extending across the slot generally parallel a short axis of the slot.

42. A print cartridge incorporating the print head of claim 39.

43. A print head comprising:

a substrate having a thickness defined between a first surface and a generally opposing second surface; and,

a slot defining a long axis and a short axis and extending between the first surface and the second surface, wherein the slot is formed at least in part, by moving a sand drill nozzle above the substrate while directing abrasive particles at the substrate.

44. The print head of claim 43, wherein the slot has one or more ribs extending across the slot generally parallel a short axis of the slot.

45. A print cartridge incorporating the print head of claim 43.

46. An apparatus comprising:

means for forming a feature into a first surface of a substrate; and,

means for directing abrasive particles toward a first portion of a second generally opposite surface of the substrate to remove substrate material, and subsequently to directing abrasive particles toward a first portion, directing abrasive particles toward a second different portion of the second surface of the substrate to remove additional substrate material, wherein said directing, in combination with said forming, form a slot having a desired elevational profile.